St Brigid's was built between 1968-1970 to serve the 'Meadow' district of Newry which had expanded rapidly in the 1950s and 1960s. Costing £200,000 it replaced a temporary Chapel-of-Ease at Rooney's Meadow which had served the people of the area since 1958.

The site of the new Church was blessed and the foundation stone laid by Most Rev Dr Eugene O'Doherty on 13 June 1968 and was opened for Sunday Mass on 14 June 1970. The Church was formally opened by Dr O'Doherty on 18 October 1970 at a Mass concelebrated Mass with 10 native Newry priests. It was presided over by His Eminence, Cardinal William Conway and was attended by Most Rev Dr William Philbin, Bishop of Down and Connor, representatives of other Christian denominations in Newry and Catholic clergy from the Dromore and Armagh dioceses.

St Brigid's Church has the largest capacity of any church in the Dromore Diocese with 1200 seats.

The large Sanctuary area with its freestanding altar of unpolished Newry granite which is the unobstructed focal point of the Church, is floored with golden travertine marble and white and golden brown mosaics. The Baptismal Font of Newry granite is situated near the Sanctuary area which is overlooked by the four evangelists in symbolic form, carved by Mr John Haugh.

Four confessionals, simply designed in mahogany, are placed on the sides of the Church, recessed from the aisles. The Stations of the Cross are of Italian design with figures in cast aluminum and crosses in natural mahogany.

The front entrances are deliberately prominent and significant. Each is 15 feet wide by 23 feet. high and contains double doorways. These wide-open doors, reflecting the Irish tradition of hospitality and with an unobstructed view of the Sanctuary area, offer a warm welcome to parishioners summoned to prayer by the mellifluous tone of the Church bell.